

WHAT IS CLAIMED IS:

1. A thermal processing apparatus, comprising:
at least one heating element;
a heat distributing plate, having a heating surface and being disposed in thermal communication with the at least one heating element, the heat distributing plate being constructed and arranged to distribute heat from the heating element onto the heating surface;
a substrate support, constructed and arranged to support a substrate at a position above the heating surface; and
an actuator, constructed and arranged to rotate the substrate during a heat transfer operation.
2. A thermal processing apparatus according to claim 1, wherein the substrate support is rotated by the actuator to transmit rotation of the actuator to the substrate.
3. A thermal processing apparatus according to claim 1, wherein the at least one heating element comprises an array of heating elements.
4. A thermal processing apparatus according to claim 1, wherein at least two heating elements of the array of heating elements are independently controllable.
5. A thermal processing apparatus according to claim 1, wherein the substrate support further comprises a plurality of spheres disposed such that at least a portion of each of the spheres extends beyond the heat transfer surface and the spheres are rotatable by action of the actuator to transmit rotational motion to the substrate.
6. A thermal processing apparatus according to claim 5, wherein the plurality

of spheres comprises exactly three spheres and the spheres comprise a thermally insulating material.

7. A thermal processing apparatus according to claim 1 further comprising drift controlling structure.

8. A thermal processing apparatus according to claim 7, wherein the drift controlling structure comprises a plurality of members constructed and arranged to contact an edge of the substrate.

9. A thermal processing apparatus according to claim 8, wherein the members contact the edge of the substrate consistently during processing.

10. A thermal processing apparatus according to claim 8, wherein the members contact the edge of the substrate intermittently, when the substrate has drifted beyond a predetermined acceptable range.

11. A thermal processing apparatus according to claim 8, wherein the members further comprise rotatable members in contact with the edge of the substrate.

12. A thermal processing apparatus according to claim 11, wherein the rotatable wheels are drivable such that they exert a rotational force on the substrate and thereby act as the actuator to rotate the substrate.

13. A thermal processing apparatus according to claim 1, wherein the substrate support comprises a gas bearing.

14. A thermal processing apparatus according to claim 13, wherein the gas bearing is controllable to act as the actuator.

15. A thermal processing apparatus according to claim 13, further comprising drift controlling structure.

16. A thermal processing apparatus according to claim 13, further comprising a temperature controlling unit constructed and arranged to control a temperature of a gas used to form the gas bearing.

17. A method of thermally processing a substrate comprising:
heating a heat distributing plate to create a predetermined temperature profile at a heating surface thereof;
placing the substrate above and in thermal communication with the heating surface such that heat is transferred from the heating surface to the substrate; and
rotating the substrate relative to the heating surface such that variations in the temperature profile transferred to the substrate are reduced.